

**North Dakota Teachers' Fund
For Retirement**

2001 RETIREE STUDY

November 15, 2001

November 15, 2001

Board of Trustees
North Dakota Teachers' Fund for Retirement
P.O. Box 7100
Bismarck, ND 58507-7100

Subject: 2001 Retiree Study

We are pleased to present the 2001 Retiree Study that you requested.

Purpose

This report has several purposes. First, we were asked to determine, for the current retiree group, the gap between the current benefits and three alternative targets or goals:

The 2.00% Multiplier Goal—the original benefit, recalculated using current provisions, including the 2.00% multiplier, the Rule of 85 and current early retirement reduction factors and rules. Ad hoc increases granted in the past are ignored.

The TFFR Goal, defined as the 2.00% Multiplier Goal, increased 2.00% for each year from the year of retirement to the present.

The Full CPI Goal, defined as the 2.00% Multiplier Goal, increased to offset the total loss in purchasing power, as measured by the CPI-U index.

We provide two ways for measuring the cost to bring retirees' benefits up to the goal level. First, we determined the actuarial present value of the shortfall. Then we calculated the impact on the margin if the shortfall were eliminated in the current year.

In addition, we have provided background information on the kinds of post-retirement increases in use, and information about how frequently the different approaches are used in public plans and teacher/school employee plans across the country.

We have also looked at the current practice of granting ad hoc increases based on the following formula: $\$2.00 \times \text{Years of Service}$, Plus $\$1.00 \times \text{Years Retired}$. (Call this the \$2/\$1 approach.) We have projected the impact on some hypothetical retirees if this practice were continued.

Finally, we have tried to address what we think are some misconceptions about the impact of automatic benefit increases on the future availability of margin, and we have recommended an alternative structure for future ad hoc increases based on the TFFR Goal.

Organization of Report

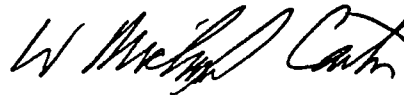
This report is organized into seven sections. Section I discusses the various kinds of post-retirement increases in use. (We have generally used the phrase "cost-of-living adjustments" or "COLA's" to mean any kind of post-retirement benefit increase.) Section II examines COLA's from a national perspective, showing statistics on the frequency of use of the various approaches. Section III includes several tables that provide a snapshot of the current TFFR retirees, while Section IV looks at the gap between the current benefits and the three alternative goals. Section IV also provides the cost to close the gap. Section V discusses the \$2/\$1 approach. Section VI includes our remarks about the impact of automatic benefit increases on the margin. Finally, Section VII includes our recommendation for how future cost-of-living increases should be structured.

We want to thank the staff for providing the additional data required for this study that is not part of the regular valuation data, and especially for the extra efforts they exerted to add final average compensation information for many of the pre-1985 retirees. We ended up with virtually complete information on all retirees for the last 30 years.

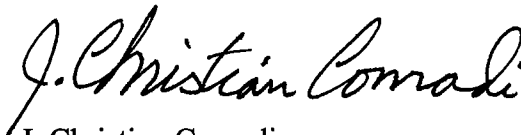
We will be happy to discuss the results of this analysis at the Board meeting on November 15, 2001.

Sincerely,

Gabriel, Roeder, Smith & Company



W. Michael Carter
Senior Consultant



J. Christian Conradi
Senior Consultant

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SECTION I - APPROACHES TO POST-RETIREMENT BENEFIT INCREASES

Since the focus of this study is on how to structure post-retirement benefit increases, we thought it would be useful to repeat some of the observations we have made in the past about the variety of approaches being used.

Increases Unrelated to Loss of Purchasing Power

Some post-retirement increases are intended to provide an increase parallel to one being given to active employees. For example, we know of two systems (a municipal plan covering general city employees and a statewide teachers system) that routinely recalculate retiree benefits to reflect multiplier increases granted to active members. To some extent, past TFFR increases may have been intended to address this issue, since so many TFFR retirees had their original benefit calculated using low multipliers. However, this has not been an explicit part of the design of the increases.

Increases Intended to Offset Losses in Purchasing Power

Much more common are increases intended to offset some or all of the loss in purchasing power due to price inflation.

There are three basic approaches to granting cost-of-living adjustments (COLA's) to retirees:

- ad hoc increases
- automatic increases, sometimes fixed and sometimes tied to an index
- excess interest increases, including "13th checks"

Ad Hoc Increases

Prior to this year, all of the increases granted by the North Dakota legislature to TFFR retirees have been "ad hoc" increases. That is, each increase in benefits required a separate act of the legislature, and without further action, there would be no further benefit increases. With ad hoc COLA's, no matter what kinds of increases have been given in the past, there is no commitment to grant future increases.

Ad hoc increases can be structured in a variety of ways. The simplest and most common method is to use a simple percentage increase, such as 3% of the current benefit. But some ad hoc increases are more complicated. The \$2/\$1 approach that TFFR has used in the past uses a formula with dollar amounts. Other systems have used percentage increases that vary with the member's year of retirement, either using an explicit formula (0.5% for each year retired) or using a set of increases that vary by year in some other fashion.

Any particular ad hoc increase benefits only the current group of retirees (including beneficiaries receiving payments in most cases). Ad hoc increases have the smallest cost impact, since only one-year's increase is being considered; and likewise, because they involve no commitments for future increases, they give the legislature the most flexibility. On the other hand, they leave the members with no certainty about when and how much their benefits will be increased in the future to offset the erosion of additional inflation.

Automatic increases – Fixed and Indexed

This type of COLA either provides for a fixed increase each year, or it determines the increase based on the purchasing-power loss, as measured by changes in a cost-of-living index. While it is possible to grant 100% COLA's, the more common practice is to provide increases equal to some percentage of the CPI increase, almost always with some maximum built in. For example, a system might grant annual increases equal to 50% of the CPI increase, with a maximum increase of 3% per year.

Excess Interest Increases

The third approach is the "excess interest" increase. If, during the previous year, the fund earned more than some target rate (often the assumed interest rate used for the actuarial calculations), all or a part of this "excess interest" is used to provide an ad hoc increase. The increase can be paid all in one year, often in the form of a 13th check, or it can be spread out over the following year, or it can be spread out over the member's lifetime.

Design Variations

Depending on the kind of increase, the following issues also arise in deciding how a post-retirement increase program should be structured:

- Will the increases be based on the original benefit (a "simple interest" COLA), or will they be based on the current benefit (a "compound-interest" COLA)? For the same increase percentage, simple COLA's are less expensive. They also provide larger percentage increases (in terms of the current benefit) to the newer retirees, and less to the older retirees whose consumption pattern is declining and who may be living in nursing homes, long-term care facilities, or with family.
- Will the increases be given to disabled retirees and beneficiaries, as well as to service retirees? Usually the answer is yes, but we have seen exceptions.
- Will the increases be given to all retirees, or only those who fulfill an age or years-retired condition? Several systems with automatic COLA's limit these to retirees over age 60, 62 or 65, or they limit the increases to retirees who have been retired for some number of years (e.g., three, five or eight years).

- Will the increase be intended to make up for all of the loss in purchasing power, or only a fraction? A significant number of systems provide increases to make up for 50%-75% of the loss in purchasing power.
- Will the percentage increase be a fixed amount each year, or will it vary with the actual rate of inflation? Both methods are popular. The fixed amount is simpler to communicate and administer, but can provide increases that significantly vary from the goal in low-inflation or high-inflation periods.
- If the increase varies with the inflation rate, will there be a maximum increase? Maximums are virtually universal.
- Will the increases be conditioned on some measure of actuarial soundness? A few systems make the benefit increase conditional on the funded status of the system. This was done in 2001 for TFFR with the CABA—the 0.75% increase to be effective July 1, 2002.

Other Considerations – Automatic Increases

The primary advantages of an automatic increase are:

- They assure retirees that their benefits will be adjusted to offset all or a specific portion of the impact of inflation, allowing for better planning by retirees.
- They allow the costs of these increases to be recognized in advance.

Because many automatic increases are expensive, they may require an increase in future contributions.

Other Considerations – Excess Interest Increases

Excess earnings increases can be misleading. It may appear that money used for these is “excess”, because it is earnings over and above the amount assumed in the valuation. Therefore, it might appear that there is no cost impact to such increases. However, in years that your fund earns over the 8% rate, actuarial gains are produced that are needed to offset the losses produced in down years. (Compare the current investment climate with the euphoria present only two years ago.)

By taking part or all of the gain and using it to grant benefit increases, the losses that occur in bad years will accumulate, slowly driving the cost of the system upwards. This impact, though, is very difficult to measure in advance, since it depends not just on the average return but also on the amount of variation experienced in the return each year. Returns of 8% every year will generate no benefit increases, while alternating returns of 4% and 12% will produce biennial increases, even if the average return is the same.

Other objections to excess interest increases include:

- They are unrelated to the needs of the retirees and may not be consistent with the level of inflation during the year.
- They can occur several years in a row, followed by prolonged periods in which no increases are granted, because the return stayed below the assumed rate.
- In a prolonged bull market, retirees may develop unrealistic expectations about future increases.
- They create friction between retired and active members over the use of the money and the level of the investment return assumption rate.
- The amount of the increase is heavily dependent on the asset allocation policy of the Board, and this may cause friction between the Board and retiree groups over investment policy.

SECTION II – COMPARISONS WITH OTHER PUBLIC SYSTEMS

Most public retirement systems provide some kind of cost-of-living adjustment to retirees. In the latest survey carried out by the Public Pension Coordinating Council (Pendat 2000), 76% of public funds provided a post-retirement increase. Teachers and school employees were more likely to receive an increase than general state and municipal employees or police officers and firefighters.

For those reporting that they provided a post-retirement increase, the average increase for teachers and school employees in 1998 was 3.23% of their current benefit.

Of the public plans surveyed, 17% provided an automatic fixed increase and 26% provided an automatic increase that was a function of actual inflation. Another 7% of the plans provided an automatic increase based on investment performance. Therefore, 50% of the plans had some automatic mechanism for granting increases, while 27% provided an ad hoc COLA, and the balance of the plans provided no increase.

If we focus just on the systems covering teachers and school employees, then 50% provide an automatic increase (fixed or a function of inflation), 15% have an investment-results based increase, and 32% provided an ad hoc increase. Therefore, the universe of teacher systems has a higher proportion of systems with automatic increases than does the universe of all public plans.

Of the plans with an automatic increase, compound increases are more common than simple increases. Among teacher plans, almost 60% of those with an automatic increases have compound increases.

If we focus on just the statewide plans covering teachers, the number with pure ad hoc increases is less than 25%. The trend has been a slow increase in the number of systems using an automatic benefit increase of some form.

Chart 2.1 shows the number of public systems of various types that provided a post-retirement benefit increase, and Chart 2.2 shows the amount of the increase in 1998, measured as a percentage. Charts 2.3 and 2.4 show the distribution of various kinds of COLA provisions.

CHART 2.1

COLA Provision

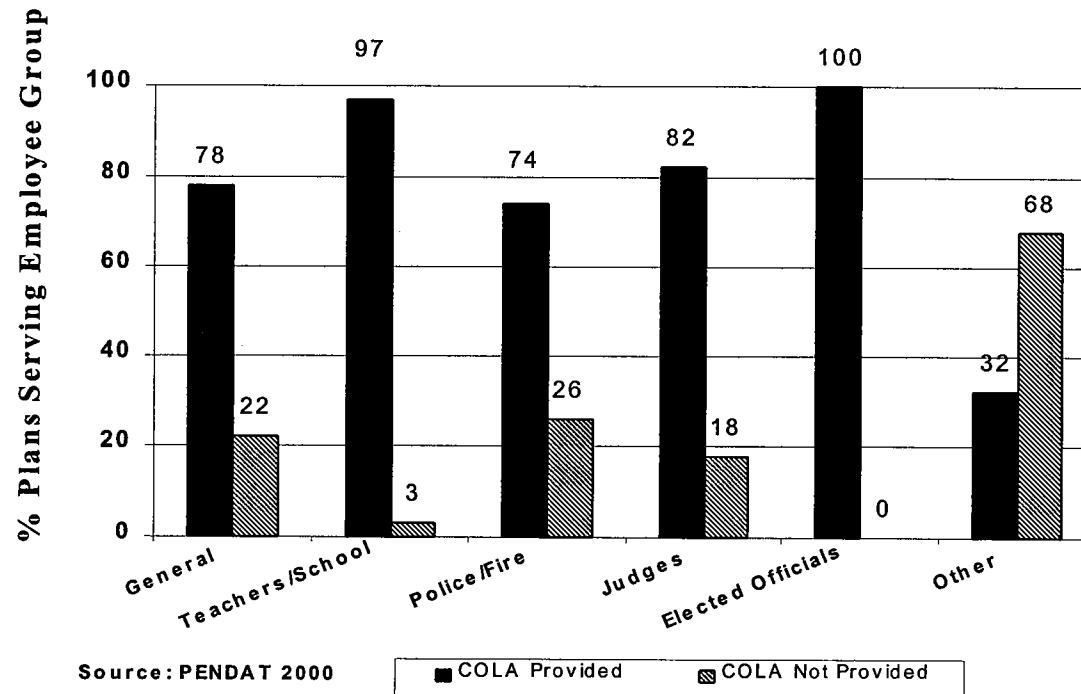
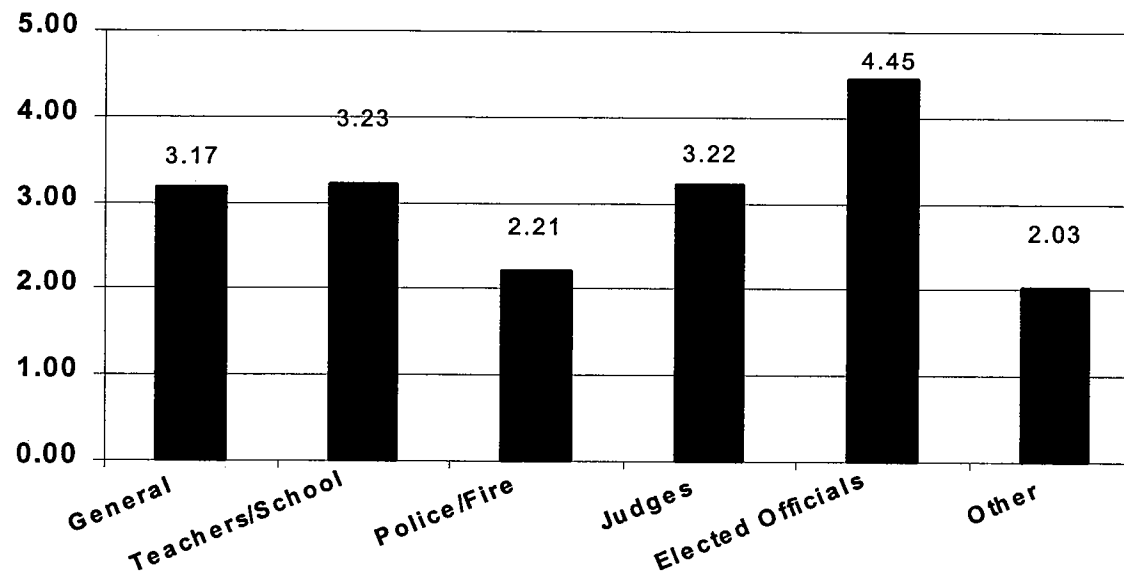


CHART 2.2

1998 COLA



Source: PENDAT 2000

CHART 2.3

Types of COLAs

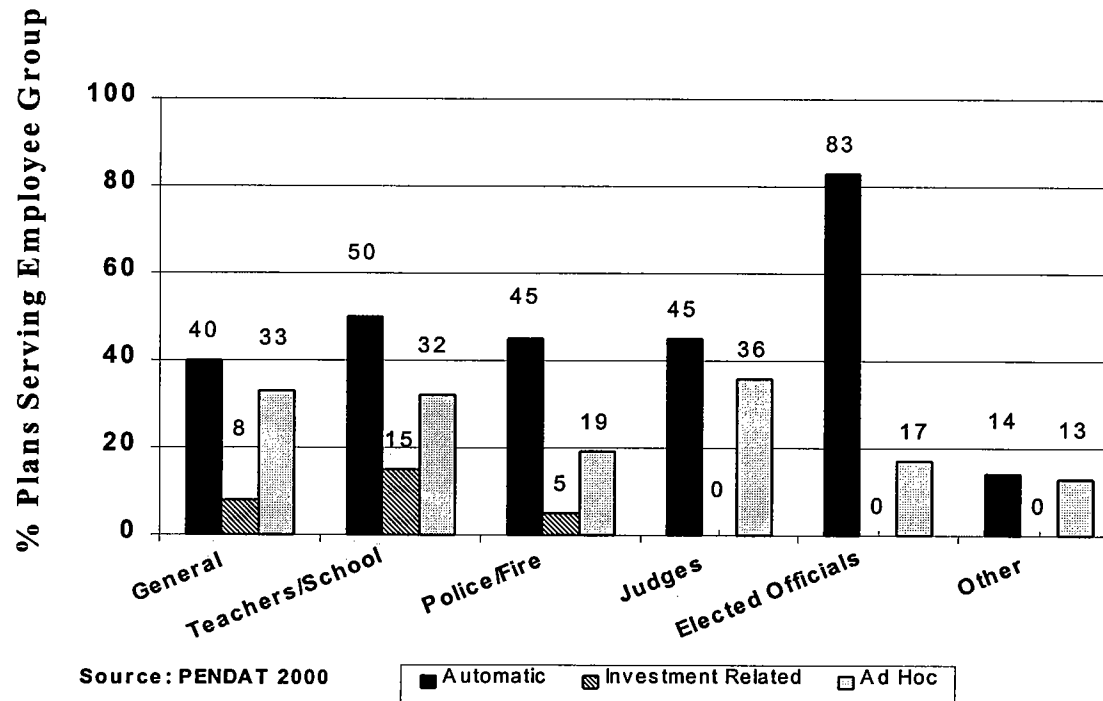
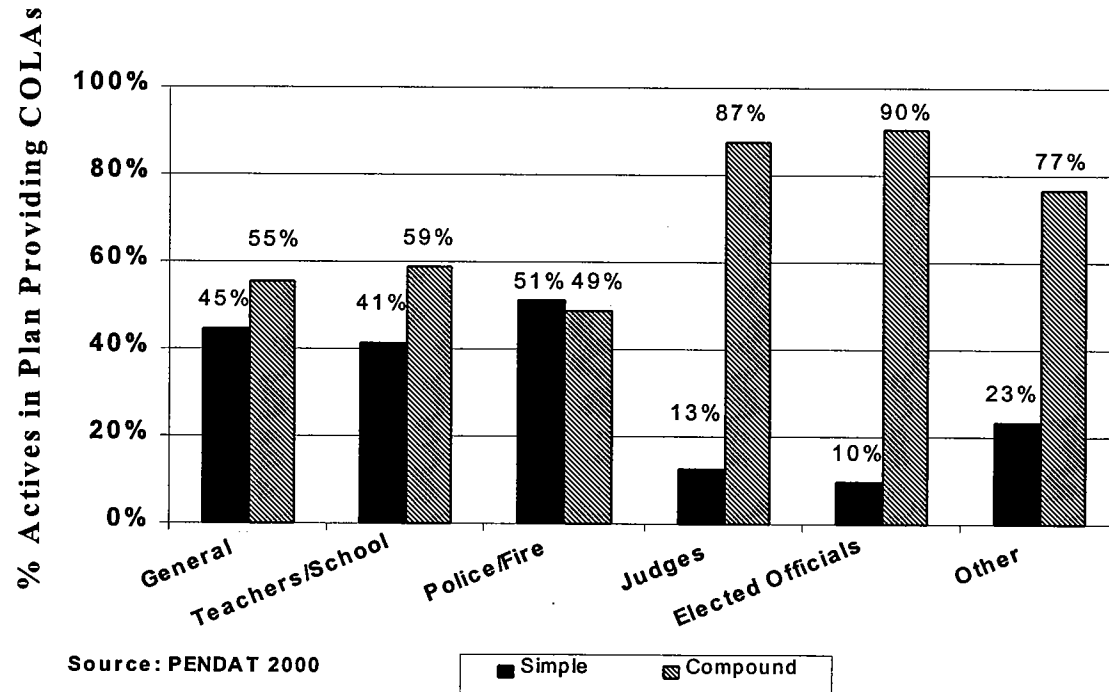


CHART 2.4

Simple and Compound COLAs



SECTION III – RETIREE STATISTICS

There were 4,777 members who received a retirement benefit in June 2001. Of these, 70 were disabled retirees and 443 were beneficiaries, leaving 4,264 regular retirees.

For the 4,264 regular retirees, about 34% were males and 66% were females. They were 74.0 years old on average, and they had earned an average of 27.7 years of service. Males were a little younger and had a little more service at retirement than females. The average regular retiree started receiving benefits about 13 years ago.

The average monthly benefit in June 2001 was \$1,024. If we exclude the retirees who elected a Level Income option, the average benefit is \$964 per month. Note that because these figures were taken from June 2001, they do not include the effect of the increases that went into effect in July. Reflecting the July 2001 increases raises these monthly amounts to \$1,093 (all regular retirees) and \$1,032 (excluding retirees who elected the Level Income option).

A variety of tables are included in this section to provide more detail about the distribution of the retired membership. While the statistics above reflect all regular retirees, most of these exhibits show the breakdown only for the group of regular retirees who were analyzed in this study. In our analysis, we excluded beneficiaries, disabled retirees and dual members. There were also about 150 mostly older retirees for whom we had no final average compensation information, and they were excluded. Finally, a handful of other records were excluded because of miscellaneous data problems. Still, the group analyzed included just under 4,000 members, or 94% of the service retirees and 84% of all members receiving benefits.

Table 3.1 is taken from the July 1, 2001 actuarial valuation report. It shows the distribution of all the retirees and beneficiaries by option elected. Table 3.2 is a grid showing the analysis group distributed by service and years retired. Table 3.3 provides the distribution of the analysis group by age, Table 3.4 shows the distribution by age at retirement, and Table 3.5 provides the service distribution. Table 3.6 shows the analysis group allocated by benefit amount, and Chart 3.7 shows the distribution of current benefits by year of retirement.

Throughout this report, the “year of retirement” is the fiscal year that ends on June 30 of that year. I.e., the “1987 retirees” are those members who retired between July 1, 1986 and June 30, 1987.

Table 3.1
Schedule of Retired Members by Type of Benefit

Type of Benefit/ Form of Payment (1)	Number (2)	Annual Benefits Amount ¹ (3)	Average Monthly Benefit (4)
Service :			
Straight Life	2,566	\$ 23,659,546	\$ 768
100% J&S	872	14,674,560	1,402
50% J&S	301	4,860,889	1,346
5 Years C&L	31	343,411	923
10 Years C&L	140	1,671,746	995
Level	354	7,174,775	1,689
Subtotal:	4,264	\$ 52,384,927	1,024
Disability:			
Straight Life	50	\$ 492,346	\$ 821
100% J&S	10	85,121	709
50% J&S	7	66,317	789
5 Years C&L	2	24,021	1,001
10 Years C&L	1	7,420	618
Level	0	0	0
Subtotal:	70	\$ 675,225	804
Beneficiaries			
Straight Life	431	\$ 3,851,099	\$ 745
5 Years C&L	2	15,700	654
10 Years C&L	10	87,036	725
Subtotal:	443	\$ 3,953,835	744
Total:	<u>4,777</u>	<u>\$ 57,013,987</u>	\$ 995

¹Benefit amounts are before benefit increases effective 7/1/2001

Table 3.2
Distribution by Service and Retirement Year

Year of Retirement (1)	Years of Service									Total (11)
	0-5 (2)	6-10 (3)	11-15 (4)	16-20 (5)	21-25 (6)	26-30 (7)	31-35 (8)	36-40 (9)	>=41 (10)	
1964	0	0	0	0	0	0	1	2	0	3
1966	0	0	0	0	1	0	1	0	0	2
1967	0	0	0	0	0	1	2	0	0	3
1968	0	0	0	0	2	1	0	1	0	4
1969	0	0	0	0	1	0	3	1	0	5
1970	0	0	3	8	6	14	6	4	3	44
1971	0	2	9	8	9	8	5	5	1	47
1972	0	3	7	19	16	16	11	11	6	89
1973	0	1	11	12	13	23	12	1	4	77
1974	0	2	12	20	16	21	10	4	4	89
1975	0	3	26	16	20	24	6	6	6	107
1976	0	5	15	17	14	19	12	7	7	96
1977	0	3	14	9	12	12	9	4	5	68
1978	0	2	16	11	10	13	13	6	6	77
1979	0	1	9	13	6	12	6	5	2	54
1980	0	1	11	6	17	16	14	14	4	83
1981	0	1	16	9	11	24	17	15	7	100
1982	0	1	12	11	15	14	8	8	5	74
1983	0	3	13	9	17	9	6	3	1	61
1984	0	1	4	17	22	33	58	34	23	192
1985	0	2	6	4	5	5	7	4	2	35
1986	0	0	5	13	22	43	41	43	25	192
1987	0	2	7	4	6	5	4	11	1	40
1988	0	12	11	9	18	38	54	44	9	195
1989	0	5	6	2	1	4	5	9	3	35
1990	0	5	12	17	27	74	103	43	16	297
1991	0	2	11	6	18	20	19	13	2	91
1992	1	2	10	14	8	34	60	41	18	188
1993	1	4	5	6	10	9	18	9	5	67
1994	3	4	14	24	36	64	91	49	19	304
1995	0	10	10	11	28	40	57	34	7	197
1996	0	5	6	13	22	38	46	25	4	159
1997	1	9	11	5	4	13	12	1	1	57
1998	0	5	13	16	29	85	120	43	16	327
1999	0	7	8	8	11	14	14	3	1	66
2000	1	8	16	20	46	104	153	57	10	415
2001	2	3	3	1	8	13	22	2	1	55
Total	9	114	332	358	507	863	1,026	562	224	3,995

Results include analysis group only

Table 3.3
Distribution by Current Age

Attained Age (1)	Count			Total Benefit			Average Benefit		
	Male (2)	Female (3)	Total (4)	Male (5)	Female (6)	Total (7)	Male (8)	Female (9)	Total (10)
<50	-	-	-	-	-	-	-	-	-
50-54	6	10	16	14,056	19,306	33,362	2,343	1,931	2,085
55-59	168	118	286	358,119	192,428	550,547	2,132	1,631	1,925
60-64	291	317	608	510,342	435,166	945,508	1,754	1,373	1,555
65-69	340	388	728	524,707	436,061	960,768	1,543	1,124	1,320
70-74	218	403	621	296,749	380,337	677,086	1,361	944	1,090
75-79	176	367	543	220,151	299,993	520,144	1,251	817	958
80-84	129	420	549	135,703	282,915	418,618	1,052	674	763
85-89	43	328	371	38,694	202,283	240,977	900	617	650
90-94	20	206	226	15,647	132,972	148,619	782	645	658
95-99	5	43	48	4,125	29,644	33,769	825	689	704
Total	1,396	2,600	3,996	2,118,293	2,411,105	4,529,398	1,517	927	1,133

Results include analysis group only

Table 3.4
Distribution by Age at Retirement

Age at Retirement (1)	Count			Total Benefit			Average Benefit		
	Male (2)	Female (3)	Total (4)	Male (5)	Female (6)	Total (7)	Male (8)	Female (9)	Total (10)
<50	-	2	2	-	3,297	3,297	-	1,649	1,649
50-54	93	56	149	185,678	89,806	275,484	1,997	1,604	1,849
55-59	534	784	1,318	842,545	737,441	1,579,986	1,578	941	1,199
60-64	575	1,118	1,693	850,403	1,038,796	1,889,199	1,479	929	1,116
65-69	182	582	764	220,326	488,144	708,470	1,211	839	927
70-74	12	49	61	19,341	45,256	64,597	1,612	924	1,059
75-79	-	8	8	-	8,017	8,017	-	1,002	1,002
80-84	-	1	1	-	348	348	-	348	348
85-89	-	-	-	-	-	-	-	-	-
90-94	-	-	-	-	-	-	-	-	-
95-99	-	-	-	-	-	-	-	-	-
Total	1,396	2,600	3,996	2,118,293	2,411,105	4,529,398	1,517	927	1,133

Results include analysis group only

Table 3.5
Distribution by Service

Year of Service (x) (1)	Count			Total Benefit			Average Benefit		
	Male (2)	Female (3)	Total (4)	Male (5)	Female (6)	Total (7)	Male (8)	Female (9)	Total (10)
x < 5	-	1	1	-	94	94	-	94	94
5 <= x < 10	28	47	75	7,397	9,307	16,704	264	198	223
10 <= x < 15	58	285	343	18,184	92,721	110,905	314	325	323
15 <= x < 20	54	288	342	28,524	139,845	168,369	528	486	492
20 <= x < 25	86	386	472	76,177	282,816	358,993	886	733	761
25 <= x < 30	196	620	816	251,408	616,649	868,057	1,283	995	1,064
30 <= x < 35	504	538	1,042	844,206	673,595	1,517,801	1,675	1,252	1,457
35 <= x < 40	338	276	614	620,151	368,073	988,224	1,835	1,334	1,609
40 <= x < 45	123	137	260	244,040	196,017	440,057	1,984	1,431	1,693
45 <= x < 50	8	21	29	23,348	31,015	54,363	2,919	1,477	1,875
50 & Over	1	1	2	4,858	973	5,831	4,858	973	2,916
Total	1,396	2,600	3,996	2,118,293	2,411,105	4,529,398	1,517	927	1,133

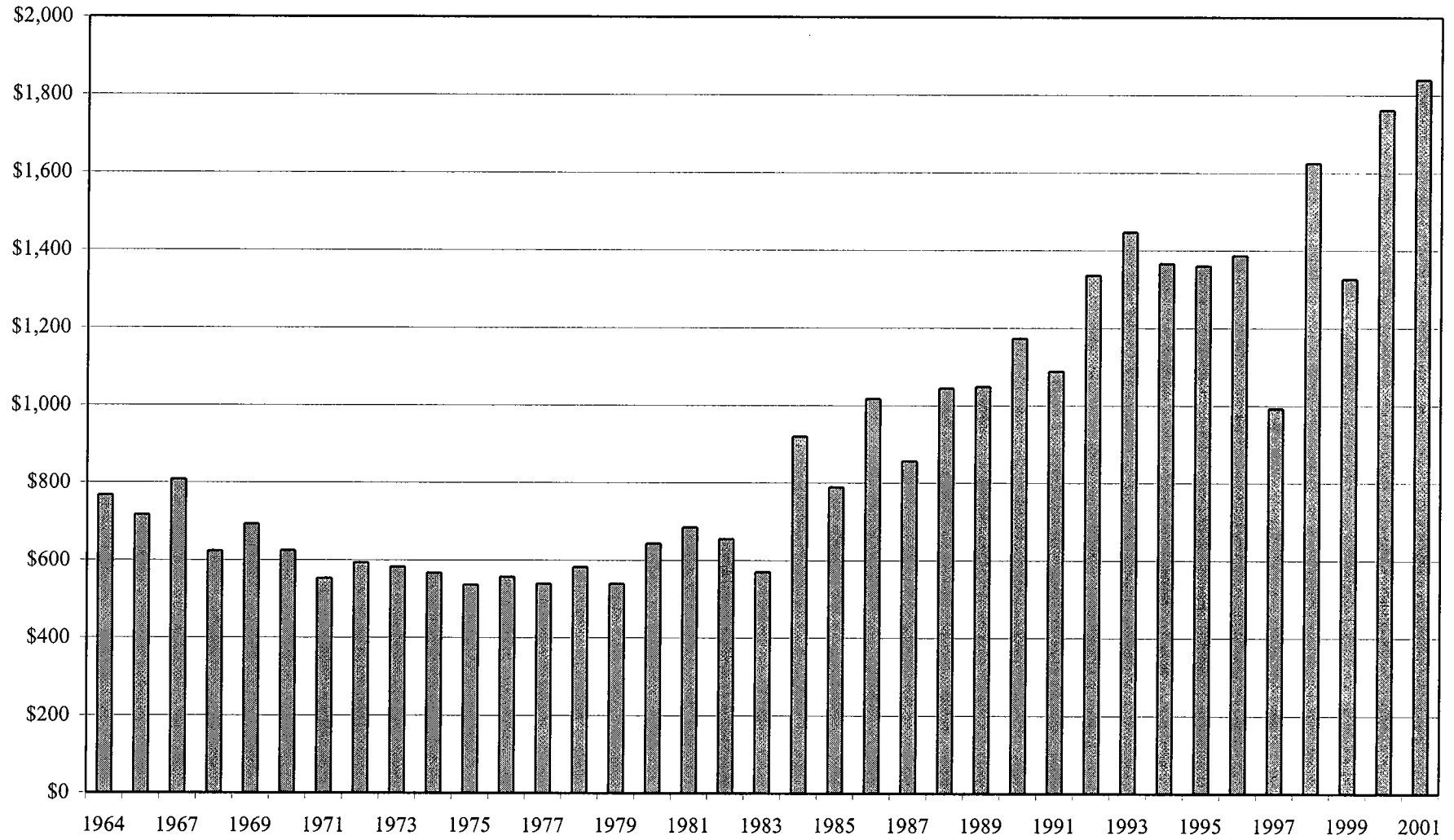
Results include analysis group only

Table 3.6
Distribution by Amount

Monthly Benefit Amount (1)	Count			Total Benefit			Average Benefit		
	Male (2)	Female (3)	Total (4)	Male (5)	Female (6)	Total (7)	Male (8)	Female (9)	Total (10)
0 - 199	18	50	68	3,033	7,637	10,670	169	153	157
200 - 299	45	112	157	11,236	28,780	40,016	250	257	255
300 - 399	39	210	249	13,357	73,000	86,357	342	348	347
400 - 499	36	232	268	16,051	104,130	120,181	446	449	448
500 - 599	37	246	283	20,368	135,756	156,124	550	552	552
600 - 699	37	250	287	24,091	161,216	185,307	651	645	646
700 - 799	51	193	244	38,600	144,954	183,554	757	751	752
800 - 899	34	148	182	28,866	125,294	154,160	849	847	847
900 - 999	55	158	213	52,253	150,794	203,047	950	954	953
1000 - 1099	55	164	219	57,598	171,905	229,503	1,047	1,048	1,048
1100 - 1199	69	134	203	79,734	153,960	233,694	1,156	1,149	1,151
1200 - 1299	74	112	186	92,362	140,070	232,432	1,248	1,251	1,250
1300 - 1399	80	106	186	107,982	142,545	250,527	1,350	1,345	1,347
1400 - 1499	82	100	182	118,616	145,035	263,651	1,447	1,450	1,449
1500 - 1599	96	73	169	148,552	112,604	261,156	1,547	1,543	1,545
1600 - 1699	69	79	148	113,664	129,858	243,522	1,647	1,644	1,645
1700 - 1799	71	47	118	124,276	82,484	206,760	1,750	1,755	1,752
1800 - 1899	57	41	98	105,411	75,373	180,784	1,849	1,838	1,845
1900 - 1999	62	40	102	120,248	78,061	198,309	1,939	1,952	1,944
2000 & Over	329	105	434	841,995	247,649	1,089,644	2,559	2,359	2,511
Total	1,396	2,600	3,996	2,118,293	2,411,105	4,529,398	1,517	927	1,133

Results include analysis group only

Chart 3.7
Monthly Retirement Benefits by Retirement Year



SECTION IV – GAP ANALYSIS

We determined for each member in the analysis group what their benefit would have been under three scenarios:

- 2% Multiplier Goal – We recalculated the retiree’s original benefit with the 2% multiplier, the Rule of 85, and the current early retirement reduction rules and factors.
- TFFR Goal – We took the benefit above and then added a 2% benefit increase for each year since the retiree’s retirement date.
- Full CPI Goal – We took the benefit from the 2% Multiplier Goal and added an amount necessary to restore the lost purchasing power, based on the year retired and the CPI-U index.

In each case, the “target” ignores actual post-retirement increases received by the member.

Next, for each retirement year, we determined (i) the average current benefit, and (ii) the average target benefit under each alternative goal. We then determined the percentage increase that would be necessary to bring the average benefit being paid up to the average target benefit under each scenario, and we determined the increase in the unfunded actuarial accrued liability that would occur if the increase under each scenario was granted. This cost impact is also shown in terms of the reduction in the margin that would occur under each scenario.

For members receiving a level income benefit, our analysis was based on the life annuity benefit determined under the formula, effectively ignoring their election throughout our analysis. This was done because of the difficulty in gathering enough information (e.g., the estimated Social Security benefit) to replicate the election under each of the scenarios.

Tables and Charts

Table 4.1 shows, by retirement year, the average current benefit and the average benefit under the three alternative goals. Behind this, Tables 4.1a, 4.1b and 4.1c shows additional details for each of the alternative goals, including the percentage increase needed by retirement year to achieve the target level. Chart 4.2 is a graph showing the shortfall—the excess of the target over the current benefit—by retirement year as a percentage of the average current benefit. Chart 4.3 shows the percentage of members in each retirement year who have been “over-rewarded,” i.e., whose current benefit is greater than the target benefit.

One of our initial concerns was that the various ad hoc increases that had been granted in the past might be over-rewarding the relatively recent retirees at the expense of those who had been retired for 15 or more years. In fact, Chart 4.2 shows the opposite. If the current benefits are measured against the TFFR Goal— the benefit recalculated under the current formula with 2% increases each year since retirement—it is the group of longest-retired members that is consistently at or over target.

Based on this TFFR Goal, on average those who retired in 1986 have fared the worst, compared to the target.

Chart 4.3 showing the “over-rewarded” members is also interesting. This shows, by year of retirement, what percentage of retirees are receiving a benefit larger than the target. As you can see, almost all of the longest-ago retirees are receiving more than the TFFR Goal. On the other hand, relatively small numbers are over-rewarded in the middle years (1978-1993).

Costs

Table 4.4 shows the actuarial present value of the shortfall. It also shows the amount of margin that would be used to provide an increase in benefit up to the target. Our analysis is based on the data, assumptions and methods used in the July 1, 2001 actuarial valuation.

Table 4.5 is included for informational purposes, and shows the CPI-U index and the amount of benefit increase required to maintain the original purchasing power.

Table 4.1
Comparison of Average Current and Average Target Benefits

Retirement Year (1)	July 2001 Avg. Current Monthly Benefit (2)	Avg. Monthly Benefit - 2% Multiplier Goal (3)	Avg. Monthly Benefit - TFFR Goal (4)	Avg. Monthly Benefit - Full CPI Goal (5)
1964	\$768	\$313	\$651	\$1,792
1966	718	353	705	1,932
1967	808	513	1,006	2,727
1968	624	185	355	942
1969	693	227	427	1,097
1970	625	244	451	1,116
1971	553	190	345	834
1972	594	283	502	1,202
1973	583	263	459	1,053
1974	567	267	455	961
1975	537	288	482	951
1976	558	346	567	1,079
1977	540	364	585	1,065
1978	582	500	789	1,362
1979	540	408	630	997
1980	644	633	960	1,364
1981	685	681	1,012	1,330
1982	656	666	970	1,225
1983	570	537	767	957
1984	920	1,101	1,542	1,881
1985	789	993	1,364	1,639
1986	1,018	1,196	1,610	1,938
1987	857	1,091	1,440	1,705
1988	1,044	1,221	1,579	1,831
1989	1,049	1,302	1,652	1,864
1990	1,173	1,332	1,656	1,808
1991	1,088	1,262	1,539	1,645
1992	1,337	1,532	1,831	1,938
1993	1,446	1,761	2,063	2,163
1994	1,366	1,544	1,774	1,849
1995	1,360	1,549	1,744	1,804
1996	1,387	1,558	1,720	1,763
1997	992	1,091	1,181	1,207
1998	1,625	1,681	1,783	1,830
1999	1,327	1,365	1,420	1,454
2000	1,762	1,776	1,812	1,831
2001	1,840	1,856	1,856	1,856

Table 4.1(a)
Comparison of Average Current and Average 2% Multiplier Goal Benefits

Retirement Year (1)	July 2001 Avg. Current Monthly Benefit (2)	Avg. Monthly Benefit - 2% Multiplier Goal (3)	Shortfall (\$) (4)	% Increase Needed (5)
1964	\$768	\$313	\$0	-
1966	718	353	0	-
1967	808	513	0	-
1968	624	185	0	-
1969	693	227	0	-
1970	625	244	0	-
1971	553	190	0	-
1972	594	283	0	-
1973	583	263	0	-
1974	567	267	0	-
1975	537	288	0	-
1976	558	346	0	-
1977	540	364	0	-
1978	582	500	0	-
1979	540	408	0	-
1980	644	633	0	-
1981	685	681	0	-
1982	656	666	10	2%
1983	570	537	0	-
1984	920	1,101	182	20%
1985	789	993	204	26%
1986	1,018	1,196	179	18%
1987	857	1,091	235	27%
1988	1,044	1,221	176	17%
1989	1,049	1,302	253	24%
1990	1,173	1,332	159	14%
1991	1,088	1,262	174	16%
1992	1,337	1,532	195	15%
1993	1,446	1,761	314	22%
1994	1,366	1,544	179	13%
1995	1,360	1,549	189	14%
1996	1,387	1,558	171	12%
1997	992	1,091	99	10%
1998	1,625	1,681	55	3%
1999	1,327	1,365	37	3%
2000	1,762	1,776	14	1%
2001	1,840	1,856	17	1%

Table 4.1(b)
Comparison of Average Current and Average TFFR Goal Benefits

Retirement Year (1)	July 2001 Avg. Current Monthly Benefit (2)	Avg. Monthly Benefit - TFFR Goal (3)	Shortfall (\$) (4)	% Increase Needed (5)
1964	\$768	\$651	\$0	-
1966	718	705	0	-
1967	808	1,006	198	24%
1968	624	355	0	-
1969	693	427	0	-
1970	625	451	0	-
1971	553	345	0	-
1972	594	502	0	-
1973	583	459	0	-
1974	567	455	0	-
1975	537	482	0	-
1976	558	567	10	2%
1977	540	585	45	8%
1978	582	789	207	36%
1979	540	630	91	17%
1980	644	960	316	49%
1981	685	1,012	327	48%
1982	656	970	315	48%
1983	570	767	197	35%
1984	920	1,542	622	68%
1985	789	1,364	575	73%
1986	1,018	1,610	593	58%
1987	857	1,440	583	68%
1988	1,044	1,579	535	51%
1989	1,049	1,652	603	57%
1990	1,173	1,656	483	41%
1991	1,088	1,539	450	41%
1992	1,337	1,831	494	37%
1993	1,446	2,063	617	43%
1994	1,366	1,774	408	30%
1995	1,360	1,744	384	28%
1996	1,387	1,720	333	24%
1997	992	1,181	189	19%
1998	1,625	1,783	158	10%
1999	1,327	1,420	93	7%
2000	1,762	1,812	50	3%
2001	1,840	1,856	17	1%

Table 4.1(c)
Comparison of Average Current and Average Full CPI Goal Benefits

Retirement Year (1)	July 2001 Avg. Current Monthly Benefit (2)	Avg. Monthly Benefit - Full CPI Goal (3)	Shortfall (\$) (4)	% Increase Needed (5)
1964	\$768	\$1,792	\$1,023	133%
1966	718	1,932	1,214	169%
1967	808	2,727	1,918	237%
1968	624	942	318	51%
1969	693	1,097	404	58%
1970	625	1,116	491	79%
1971	553	834	281	51%
1972	594	1,202	608	102%
1973	583	1,053	470	81%
1974	567	961	393	69%
1975	537	951	415	77%
1976	558	1,079	521	93%
1977	540	1,065	525	97%
1978	582	1,362	780	134%
1979	540	997	457	85%
1980	644	1,364	721	112%
1981	685	1,330	645	94%
1982	656	1,225	569	87%
1983	570	957	387	68%
1984	920	1,881	962	105%
1985	789	1,639	850	108%
1986	1,018	1,938	920	90%
1987	857	1,705	848	99%
1988	1,044	1,831	787	75%
1989	1,049	1,864	815	78%
1990	1,173	1,808	636	54%
1991	1,088	1,645	557	51%
1992	1,337	1,938	602	45%
1993	1,446	2,163	717	50%
1994	1,366	1,849	484	35%
1995	1,360	1,804	444	33%
1996	1,387	1,763	376	27%
1997	992	1,207	214	22%
1998	1,625	1,830	205	13%
1999	1,327	1,454	127	10%
2000	1,762	1,831	69	4%
2001	1,840	1,856	17	1%

Chart 4.2 - Shortfall by Retirement Year Measured as Percentage of Average Current Benefit

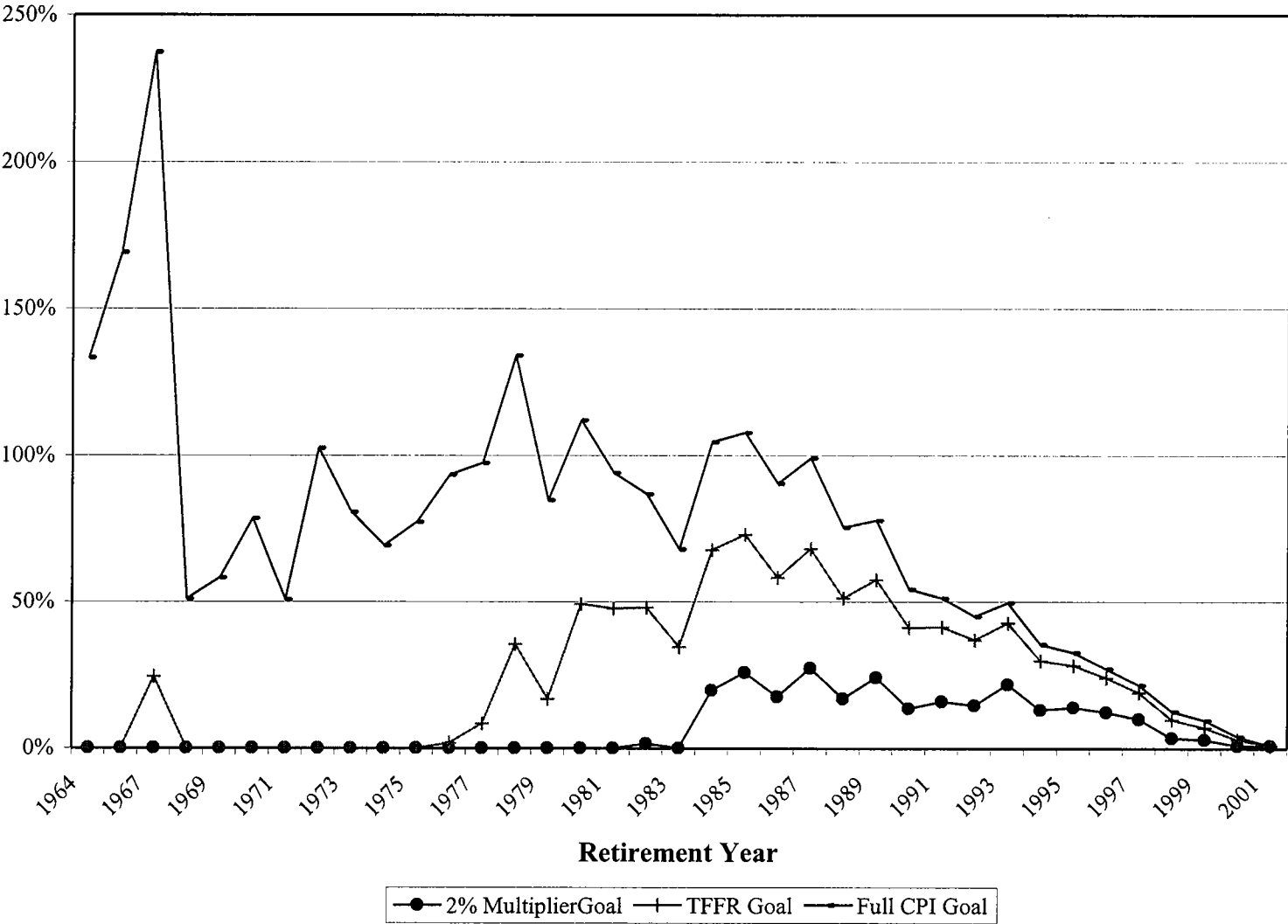


Chart 4.3 - Percentage of Members in Each Retirement Year Who are Over-rewarded

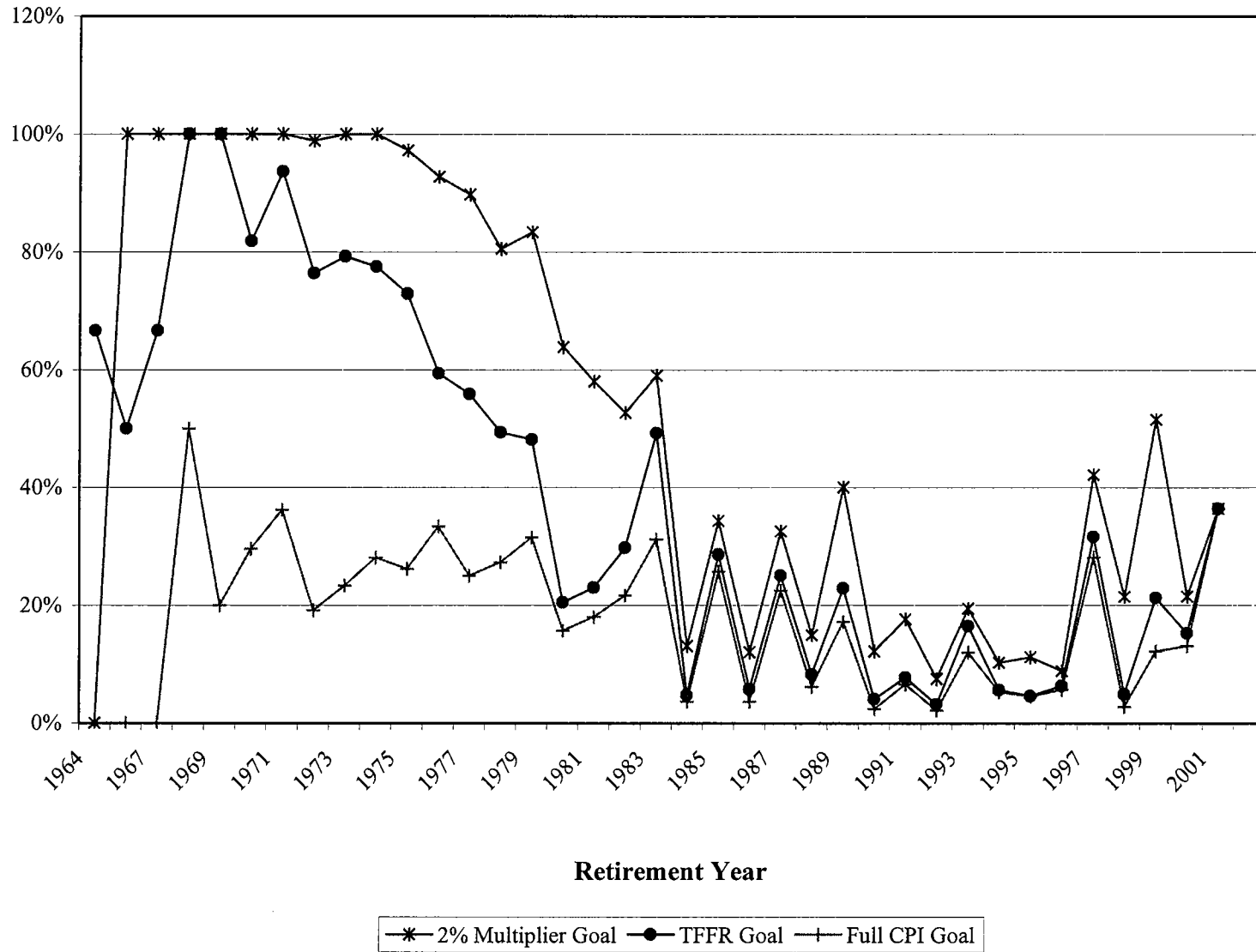


Table 4.4

Cost of Improving Average Benefit to Target Level

Items (1)	Actuarial Present Value of Additional Benefits (2)	Margin Used (3)	20-Year Funding Cost (4)
2% Multiplier	56,664,148	1.54%	5.53%
TFFR Goal	145,331,938	3.97%	7.96%
Full CPI Goal	214,906,089	5.87%	9.86%

Table 4.5

Cost of Living Index By Year and Cumulative Impact

Year of Retirement (1)	CPI-U Index (2)	Percentage Increase Required to Maintain Purchasing Power (3)
1961	29.9	594%
1966	32.4	548%
1971	40.5	438%
1976	56.9	312%
1981	90.9	195%
1986	109.6	162%
1991	136.2	130%
1996	156.9	113%
2001	177.5	100%

SECTION V – THE \$2/\$1 APPROACH

We had expressed a concern that continuing the current approach to ad hoc increases (\$2.00 x service plus \$1.00 x years retired) might significantly over-reward future retirees. To test this, we examined a hypothetical 2001 retiree with 30 years of service. We assumed that the retiree elected a life annuity, and her benefit was \$1,500 per month. We compared the impact of a series of every-other-year increases based on the current approach with a 2% per year ad hoc increase (the TFFR Goal). As can be seen from the exhibit below, the current approach actually produces a pattern fairly close to the 2% increases for this example.

Year	With \$2/\$1 formula	With 2% Increases
2001	\$1,500	\$1,500
2006	\$1,637	\$1,656
2011	\$1,841	\$1,828
2016	\$1,987	\$2,019
2021	\$2,221	\$2,229
2026	\$2,387	\$2,461
2031	\$2,651	\$2,717

Over the 30-year period, the \$2/\$1 approach provides increases that average just under 2% per year.

It is worth noting, though, that the current approach favors retirees who retired with lower-than-average final average compensation (FAC), and it provides smaller percentage increases for members who left with larger-than-average FAC's. While this formula works well for members with average benefits for their retirement year, as in the above examples, it over-rewards those with lower FAC's and leads to a shortfall for those with higher FAC's, measured against the TFFR Goal. For example, a retiree whose initial benefit is \$3,000—a 30-year retiree with a Final Average Compensation of \$60,000—would receive these benefits:

Year	With \$2/\$1 formula	With 2% Increases
2001	\$3,000	\$3,000
2006	\$3,149	\$3,312
2011	\$3,353	\$3,657
2016	\$3,499	\$4,038
2021	\$3,733	\$4,458
2026	\$3,899	\$4,922
2031	\$4,163	\$5,434

In this case, the retiree receives increases that average just over 1.0% per year.

We believe the equity arguments are on the side of those who want to substitute a percentage increase for a dollar-based increase, especially to future retirees who have the 2.00% multiplier, since that will tend to equitably preserve the purchasing power of all members who retire at the same time.

SECTION VI – COMMENTS ON AUTOMATIC INCREASES AND THE MARGIN

Margin

The margin is the difference between the 7.75% statutory employer contribution rate and the amount required to (i) pay the employer normal cost, and (ii) amortize the unfunded actuarial accrued liability over 20 years. At July 1, 2001, the margin is 3.76%. The margin is equivalent to the excess, in present-value terms, of future contributions over the contributions required to meet the system's liabilities, net of any assets already accumulated. (Let's set aside for this purpose all issues about the deferred losses in the actuarial value of assets and the further poor investment results so far in FY 2002.)

Under the TFFR Board's policies, they will support benefit increases that generally meet two tests:

- 1) There is sufficient margin available to pay for the enhancements, and
- 2) The value of the enhancements is divided between active and retired members roughly in proportion to the number of members in each group.

Therefore, if the available margin is equivalent in present value to \$120 million of additional benefits, the retirees can expect to be the beneficiaries of an enhancement of approximately \$36 million (30% of \$120 million). Once an enhancement is granted, the margin disappears, and will reappear only if there are future actuarial gains.

Automatic or Ad Hoc Increases?

The \$36 million in available present value could be spent on one large increase, payable immediately, or on a series of smaller increases spread out over many years. It is not clear to us why the large immediate payment would be preferred by all or most retirees. A large immediate increase may allow the retiree to enjoy a higher standard of living, but leaves him or her with the problem that future inflation will erode the value of the benefit significantly. The smaller increases spread out over the retiree's lifetime would prevent some of the purchasing power erosion, allowing the current standard of living to be maintained.

The key point here is that the increases under either approach have the same present value, and either increase will eliminate the same amount of margin. We grant that retirees might prefer the single large increase, but it cannot be argued that this is because of the impact on future margin.

Flexibility

There is no question that TFFR's funded position would have been worse if the automatic benefit increase proposed in 2001 had been adopted. However, TFFR's position would have been equally bad if the legislature had passed any of the other proposals that spent a like amount of margin, including proposals for a higher multiplier for actives coupled with a larger ad hoc increase for retirees. It is the spending of margin on any benefit improvement that can hamper the Fund's ability to deal with actuarial losses, such as the current investment losses. The particular kind of benefit improvement is irrelevant, because spending margin merely means using some of the contributions in excess of what is required under the funding policy.

SECTION VII - RECOMMENDATIONS

We believe the TFFR Goal is reasonable. Because of the variety of approaches that have been used to determine ad hoc benefit improvements in the past, on average, teachers who retired in the late 1960's and early 1970's already have met the goal, while many who left in the 1978-1993 period are far behind. Therefore, we believe a targeted increase that varies by year of retirement makes the most sense.

Since the cost to achieve the TFFR Goal targets would have been unaffordable, even without the poor investment markets of the last eighteen months, our recommended approach would be to:

- First, determine the amount needed to meet the TFFR Goal, as a percentage increase for each year of retirement. Table 4.1b shows these percentage increases, and Table 4.4 shows the cost to achieve the goal (approximately \$130 million).
- Then determine how much margin is available for an increase. Take 30% of this (reflecting the fact that the retirees are about 30% of the total membership).
- Next, determine the actuarial present value of increases that can be purchased with the available margin for retirees. Suppose this is \$30 million.
- Finally determine the schedule of increases by taking the percentage increases and reducing them by \$30M/\$130M. This would result in percentage increases about one-fourth of the amount needed to reach the goal. Costs would be consistent with the available margin

For example, from Table 4.1(b) we can see that the 1990 retirees need a 41% increase to bring them up to the target. Suppose that the amount available to be spent on a retiree increase was \$35 million. This is about 25% of the total \$145 million that would be needed to bring all retirees to the TFFR Goal. Therefore, the proposed increase for the 1990 retirees would be about 10% (25% of 41%). Similarly, the 1998 retirees who need a 10% increase to reach the TFFR Goal would receive a 2.5% increase (25% of 10%).

Because the percentage increases would be zero for some of the longest-retired members, you may want to consider including a minimum increase of 2-3%, so all retirees will get some increase.

This approach will produce the largest increases for teachers who retired in the mid-1980's, and are furthest from meeting the TFFR Goal. Much less of the increase will go to the retirees who left before 1978 or after 1993, who are relatively better situated.

We also continue to support the movement towards an automatic post-retirement benefit increase, although based on the current valuation results, we understand that is unlikely that this will occur in the near future. We believe that automatic increases are preferable to requiring the members to have to revisit the legislature every year to request an increase.